

We claim:

1. An interlayer for placement on a road, comprising a mixture of:
aggregate; and
an asphalt binder, wherein said interlayer has a Flexural Beam Fatigue of at least about 100,000 cycles at 2000 microstrains, 10 Hz, about 2-4% air voids, and at temperature of about 0 to 30°C.
2. The interlayer of claim 1, wherein said interlayer has a Hveem Stability at 60°C and 50 gyrations of at least about 18.
3. The interlayer of claim 1, wherein about 100% of said aggregate is able to pass through about a 9.5 mm sieve.
4. The interlayer of claim 1, wherein said asphalt binder is a polymer modified asphalt binder.
5. The interlayer of claim 4, wherein said binder further comprises a cross-linking agent that has reacted with said polymer.
6. The interlayer of claim 5, wherein said asphalt is about 80-99% by weight of said binder, said polymer is about 1-20% by weight of said binder, and said cross-linking agent is about 0 to 2% by weight of said binder.
7. The interlayer of claim 1, wherein said binder further comprises an asphalt extender.
8. The interlayer of claim 1, wherein said interlayer is about 0.5 to 2 inches thick on said road.
9. The interlayer of claim 1, wherein said binder is chosen based on the climate.

10. The interlayer of claim 9, wherein said binder is chosen from a Type I binder for Northern climates, a Type II binder for Central climates, and a Type III binder for Southern climates.

11. The interlayer of claim 1, wherein a Type I binder is chosen so that the complex shear modulus divided by the sine of the phase angle of said binder is at least about 2.2 kPa on RTFO residue when measured at a temperature of at least 52°C, the creep stiffness of said binder at 60 seconds as measured on the BBR using PAV-aged residue is less than 300 MPa at a maximum of about -18°C, and said ductility at 4°C on RTFO residue at 5 cm/min strain rate is at least about 30 cm, when using straight-sided molds.

12. The interlayer of claim 1, wherein a Type II binder is chosen so that the complex shear modulus divided by the sine of the phase angle of said binder is at least about 2.2 kPa on RTFO residue when measured at a temperature of at least 58°C, the creep stiffness of said binder at 60 seconds as measured on the BBR using PAV-aged residue is less than 300 MPa at a maximum of about -12°C, and said ductility at 4°C on RTFO residue at 5 cm/min strain rate is at least about 20 cm, when using straight-sided molds.

13. The interlayer of claim 1, wherein a Type III binder is chosen so that the complex shear modulus divided by the sine of the phase angle of said binder is at least about 2.2 kPa on RTFO residue when measured at a temperature of at least 64°C, the creep stiffness of said binder at 60 seconds as measured on the BBR using PAV-aged residue is less than 300 MPa at a maximum of about -6°C, and said ductility at 4°C on RTFO residue at 5 cm/min strain rate is at least about 10 cm, when using straight-sided molds.

14. The interlayer of claim 13, wherein the rotational viscosity of said binder is less than about 3000 cPs at 135°C.

15. The interlayer of claim 1, wherein the rotational viscosity of said binder is less than about 2500 cPs at 135°C.
16. The interlayer of claim 1, wherein said interlayer has a maximum of about 2.5% air voids.
17. The interlayer of claim 1, wherein said interlayer has a VMA of at least about 16%.
18. The interlayer of claim 1, wherein said interlayer is substantially impermeable.
19. The interlayer of claim 1, wherein said interlayer is recyclable.